

Overview of capacity building opportunities in “One Health”, internationally and with focus on Africa

A desk top study



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List of Abbreviations

AA	Foreign Office, Germany
blended	web based and online face-to-face
BMZ	Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung
CAIDERA	Central African Infectious Disease and Epidemics Research Alliance
CD	Capacity building
CERMEL	Centre de Recherches médicale de Lambaréné, Gabon
CIH	Centre for International health, University of Munich
DAAD	German Academic Exchange Service
Exceed	Higher Education Excellence in Development Cooperation
FAO	Food and Agriculture Organisation of the United Nations
FLI	Friedrich -Loeffler-Institute, Federal Research Institute for Animal Health
FUN	France Université numérique
GLACIER	German - Latin American Centre of Infection and Epidemiology Research & Training
G-WAC	German-West African Centre for Global Health
IP	Institute Pasteur
ITM	Institute for Tropical Medicine, University of Antwerp, Belgium
JEE	Joint External Evaluation
JITO Health	Joint Initiative for Teaching and Learning on Global Health Challenges and One Health
KAAB	Kolegij AAB in Pristina, Kosovo
NBW	National Bridging workshop
OIE	World Organisation for Animal Health
OH Target	One Health Training And Research Global NETwork.
PACE-UP	PAN ASEAN Coalition for Epidemic and Outbreak Preparedness
PVS	Performance of Veterinary Services
SACIDS	Southern African Centre for Infectious Disease Surveillance
SV OH	Sector project on One Health
TZR	Tiermedizinisches Zentrum für Resistenzforschung, Free University of Berlin
T&TU	Division of Infectious Diseases and Tropical Medicine - Teaching and Training Unit; University of Munich
UCM	Universidade Católica de Mozambique
UGHE	University of Global Health Equity, Rwanda
UNZA	University of Zambia
VLC	Virtual Learning Centre
WHO	World Health Organisation

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Executive Summary

An interdisciplinary approach to address global health challenges such as the Covid-19 pandemic, climate change, loss of biodiversity, human migration has been framed by the One Health approach. This approach is promoted at global level by the Tripartite of the World Health Organisation, the World Animal Health Organisation, the Food and Agriculture Organisation of the United Nations, recently joined by the United Nations Environment Programme to form the Quadripartite. The German government through its Ministry of Economic Cooperation and Development supports this approach with its One Health strategy and investment in several technical cooperation projects.

Capacity building is a very important tool to advocate for and to disseminate the principles and opportunities of One Health and is usually a component of technical cooperation projects.

A desk-top study was carried out during January and February 2022 to provide information on existing current and planned capacity building opportunities in the One Health domain. The main objective was to provide this information to people managing and working in technical cooperation projects, to find the best suited partners and possibilities for cooperation in capacity building. The study was limited to offers by international organisations and institutions of higher education in the EU and USA and those in Sub-Saharan Africa.

The results are presented in form of an Excel database of training courses for which detailed information was available as well as in a narrative part which describes capacity building programs such as those offered by the German Academic Exchange Office (DAAD), the African One Health University Network (AFROHUN), the Southern African Centre for Infectious Disease Surveillance (SADCIS) and the Tripartite.

The database has two folders, one for EU / USA and one for Africa. It lists four categories of offers, namely short courses and summer schools, Certificate -, Diploma- and Master of Science courses and few PhD programs with structured course work.

A wide range of topics, ranging from just “One Health” to more specific topics such as “One Health: ecosystems, humans and animals” can be found in the database offered in EU and USA either online, blended, on campus or in combination. Universities in five African countries have also an interesting range of MSc courses with One Health relevance already and several other Universities indicated during interviews that they are in advanced planning stages for such courses.

Important multipliers of One Health capacity building initiatives are the two University networks in Africa, namely AFROHUN and SADCIS which support their members in engaging in training and research. Besides support to university training courses, AFROHUN embraces different approaches to capacity building, ranging from community based attachment of students to Training of Trainers at Technical colleges to integration of One Health core competencies into undergraduate curricula. These extra-university activities are supported mainly by the USAID funded “One Health workforce – next generation” program. The “One Health Academy”, which is work in progress, is a depository of training materials and online courses in the public domain.

An ever increasing amount of awareness and training material on One Health is also available in the public domain through the FAO elearning Academy, and adapted to the different regions in the FAO regional virtual learning centres. OIE is developing the OIE Training Portal which will be populated with courses relevant for the critical competences of Veterinary services, including that on One Health. WHO has launched the OpenWHO as a depository for online training material, including on One Health. AFROHUN has made a series of 16 One Health “core competencies” available online.

The study provides ample evidence that a wide range of capacity building online material and on campus training opportunities exists already, internationally as well as in Africa. Despite a Covid-19 related slow-down of offers by African universities, the interest to develop more such offers in the future or to revive old offers was demonstrated in all interviews with African partners. Therefore, it is recommended for project /program planners and implementers to carefully screen this and other inventories before investing in developing project driven courses.

1. Introduction

The interest in One Health has grown rapidly with the onset of the Covid-19 pandemic; the number of Institutions that accommodate the principle of interdisciplinary approaches to address questions of public health, pandemic prevention, zoonotic, emerging and re-emerging diseases and the influence of environmental changes on global health are proliferating. An all-encompassing definition of the term “One Health” has recently been defined by the One Health High Level Expert Panel¹, which represents the lead institutions promoting this approach.

The leading experts and organizations have long embraced the One Health paradigm and have assisted in the international debate and have organized One Health Conferences. The general workforce on the ground dealing with the issues, however, have a lack of knowledge, understanding and acknowledgement of the necessity to “think outside the box”, to “see the interlinkages between animal-, human- and environmental health” and to “break down silos” of mandate, territory and budget focused ministries.

Capacity to grasp the meaning of One Health and to translate it into action needs to be built from grass root to ministerial level in developing as well as in developed countries. Capacity building measures can be applied in different forms, ideally starting at secondary school level, as part of undergraduate training at institutions of higher learning, at specialized graduate and postgraduate level or as short courses integrated into Continuous Professional Development (CPD) training for a wider audience, summer schools or tailor made courses for specific audiences in a specific context.

With this background in mind, this study set out to explore the landscape of capacity building opportunities offered or planned by Institutions of higher learning, research institutions, international institutions, other groupings such as networks, commissions and programs.

2. Objective of the study

The objective is to compile an inventory in form of an excel data base listing different types of capacity building opportunities that are offered by institutions and organizations identified during the study. In addition, a descriptive part will provide references about relevant programs or initiatives with capacity building elements which some GIZ projects might find appropriate for integration into their outreach and support.

The compiled information can be used by projects, by institutions, by donors and by stakeholders to find the best suited cooperation partners for capacity building activities in development cooperation or in networking. The information can also be used to bring academia and the implementation level closer together, e.g. field experience or “best practices” could be taken up by academia and integrated into curricula while academia could also advice the implementation level.

Due to time limitations, the study focus is on offers by international organizations and institutions of higher education in Europe and the USA and those in Sub-Saharan Africa. A similar study with focus on

¹ <https://www.who.int/groups/one-health-high-level-expert-panel/members>

Latin America or Asia would complete the outcome of this study and could be useful for projects with focus on these regions.

3. Background

The landscape of learning has changed drastically since the onset of the Covid-19 pandemic which led to closure of schools, Universities and Colleges and made a rapid adjustment necessary. E-learning has largely replaced face-to-face learning during the last 2 years and has seen quantum leaps in terms of quality and variety of approaches. Online learning ranges from a simple powerpoint presentation with or without voice-over to combinations of videos, text, records of webinars with online tutoring and online person-to-person coaching (blended online learning) to written online assignments and multiple choice tests. To cap a mushrooming multitude of such courses, international Organizations (see Chapter 5.3) are developing Guidelines for quality control and assessment criteria.

Producers of this online material frequently use extra-University or extra-Organization e-learning platforms to offer their courses to the interested public. The courses are generally free of charge, however, a fee needs to be paid for taking a final test in order to get a Certificate or to download materials for storage on a personal computer. The learning platforms with One Health courses listed in this document are:

edX Online Learning (www.edx.org) – offers courses produced by > 160 Universities

Coursera (www.coursera.org) – offers courses produced by > 170 Universities and companies

For Universities /Organizations that want to offer their online training within their own setting, online learning management software programs like **Moodle**² or **Canvas**³ are often used.

Since the objective of this study is the compilation of an inventory, one needs to acknowledge that there are already a good number of such inventories that attempt to describe the landscape of One Health initiatives worldwide. These inventories cover the entire field, ranging from project based approaches/programs to research, policy development, networking and exchange of knowledge, to capacity development. To name just a few:

- “One Health Directory” commissioned by the One Health Research, Education and Outreach Centre (OHRECA) based at the International Livestock Research Institute in Nairobi, Kenya⁴. This directory contains 291 initiatives and can be searched, amongst others, by “type of initiative”. If one chooses “capacity building”, 100 initiatives are shown. This study has screened them all and has extracted those that met the criteria of selection.
- A Chatham House study of 2018 on One Health networks⁵
- A recent publication (2021) on “The One Health landscape in Sub Saharan Africa (Fasina et al, 2021)

² <https://moodle.com/>

³ <https://www.instructure.com/>

⁴ <https://datastudio.google.com/reporting/4ee89aa5-23ce-4cf7-accb-7b1048b6e557/page/LOAUB?s=hPV54T-zlrc>

⁵ <https://www.ncbi.nlm.nih.gov/pubmed/29880158>

- A publication on “One Health capacity building in Sub Saharan Africa” (Rwego et al, 2016)
- A desk top study on One Health networks carried out for GIZ (2020)
- A “One Health library” by the One Health Commission⁶
- A “Who is who in One Health” by the One Health Commission⁷

While it is very encouraging to see this plethora of One Health initiatives, programs, networks and capacity building opportunities, the study commissioned by BMZ/SV OH is specifically intended to add an inventory for very practical use. Opportunities are listed in a data base with as much information as possible provided for the user to choose according to existing needs in the context of a project, a program, ongoing or in the planning stages, in order to find the most feasible, cost- and time effective offers.

4. Material and methods

The study was carried out over a period of two months (January and February 2022), through online and telephone interviews, internet and literature search and few face-to-face interviews. Databases and inventories as listed above were included in the search.

Many institutions provided information on their activities that they had accomplished but discontinued or for which the last intake of students had already been completed. This information was **not** included in the final analysis. Results are presented only for **ongoing activities and those that will start within the next 24 months**.

The results are presented in form of an excel database. The database contains 20 columns, the totality of which provides all essential information on the training opportunity. The database has four different pages:

1. A description and a list of choices for each column
2. Capacity building opportunities primarily based in Europe and USA
3. Capacity building opportunities primarily based in Africa
4. Abbreviations

The data base is sorted by type of Capacity building opportunity (CD).

Some opportunities did not fit this form of presentation because they form part of an overall program and can only be described in context; or they are in an advanced stage of planning but lack an essential element; or are mainly research oriented with a strong CD element.

For these opportunities chapter 5.2 of this report summarizes the findings in a narrative part.

⁶

https://www.onehealthcommission.org/en/resources_services/one_health_education_resources/primary_secondary_k12_oh_education_resources/

⁷

https://www.onehealthcommission.org/en/resources_services/whos_who_in_one_health/academic_organizations/

Criteria for inclusion either into the database or the narrative part were the following:

- The offers contain One health core competencies, One Health Modules, components from at least two sectors of the three One Health sectors
- The offeres have been identified as One Health capacity building initiatives by the supporting institutions
- The offeres are open for participation to international students from other Universities than the one offering the course

5. Results

5.1 Data base for ongoing and planned One Health capacity building opportunities

5.1.1 Data base for Europe and USA

The database lists courses for qualification in One Health at different levels, including postgraduate courses, short courses or summer schools, the latter also open also for nonprofessionals and the interested public. Of particular interest are courses organized in the framework of a **North – South partnership**. They are designed to cater mainly for students from developing countries and often integrate part of the studies to take place in the partner country, e.g. collaboration between ITM, Belgium and University of Pretoria, South Africa, the DAAD supported One Health-TARGET cooperation between University of Munich and Nepal and Ghana based Universities.

Some courses are very **flexible in their design** and allow also part time participation as well as a choice of different levels of qualification, e.g. from Certificate level to Diploma level and MSc level, while following the same course. This offers a lot of possibilities to participants and the possibility to combine study with work or to take the qualifications in a step wise approach with breaks in between. Examples are the “One Health” courses offered by University of Edinburgh and the University of Glasgow in UK.

Some courses with a **clear focus on human health** were included because in the course description the multidisciplinary focus was highlighted as an essential element in the curriculum, e.g. *MSc International Health* at the University of Munich.

Certificate courses

Two Certificate courses were identified that are offered online and open to participants from all disciplines. They are the lowest level of a gradually increasing qualification from Certificate to Diploma to MSc and offered by the Universities of Glasgow and Edinburgh. The University of Illinois also offers a Certificate course of 16 weeks in “Global One Health”, but it is reserved as an elective for students of the MSc in Veterinary Sciences and is therefore not included in the database.

Diploma courses

The two Diploma courses are the next level of qualification of the two Certificate courses offered by the Universities of Glasgow and Edinburgh.

Master of Science courses

Eleven MSc courses were identified, of which two will start in 2022 and one is still under preparation for 2022/23. These three courses fall under the DAAD programs described below.

Eight MSc courses are ongoing, two of which are the third level of qualification following on the postgraduate Diploma offered by the Universities of Glasgow and Edinburgh.

Out of the other six, three are online, three are on campus and their duration range between 2 and 3 years.

PhD studies

Three opportunities under the new DAAD programs are listed in the database, with details yet to be fully developed by the respective projects.

Other interview partners such as the new Helmholtz Institute at the University of Greifswald Germany; the new Centre for research in AMR (Tiermedizinisches Zentrum für Resistenzforschung, TZR) in Berlin, Germany, the German research institutes like Friedrich Löffler Institute, Institute for International Animal Health and One Health⁸; Bernard Nocht Institute, Department of Infectious disease epidemiology⁹; Charité Berlin, Global Health¹⁰; Robert Koch Institute¹¹, offer opportunities to their longstanding partners in the global South to engage in PhD studies on selected topics in One Health, e.g. in Antimicrobial resistance, emerging and re-emerging diseases and zoonotic diseases. They are not included in the database but these institutions have indicated their interest in research cooperation in the field of One Health.

Short courses are a very good option to familiarize oneself with the One Health topic and are offered usually online, mostly blended and combined with group work using Zoom or Moodle platforms. They focus on One Health core competencies and range between few hours (WHO courses) and 10 weeks (University of Munich). Eighteen such courses have been identified.

Summer schools, originally intended for students to add dedicated topics to their regular studies during the vacation period, offer also interesting opportunities to development workers and partners, as some of them have changed their concept also to hybrid teaching, i.e. for nationals the event takes place on campus and for international participants it can be followed online. Five such events have been identified for 2022, however, the preparations for two of them are still ongoing and interested clients should watch the respective websites.

⁸ <https://www.fli.de/de/institute/institut-fuer-internationale-tiergesundheitone-health-iitg/>

⁹ <https://www.bnitm.de/forschung/forschungsgruppen/epidemiologie-und-diagnostik/abteilung-infektionsepidemiologie/>

¹⁰ https://globalhealth.charite.de/en/teaching_and_training/

¹¹ https://www.rki.de/EN/Content/Institute/International/international_activities_node.html

5.1.2 Data base for Africa

A total of twelve MSc courses were identified, five of which are offered by the University of Zambia in the framework of the Worldbank Project “African Higher Education Centres of Excellence” (ACE)¹² and with the support of the SACIDS network (see 5.2). The other MSc courses are offered by Tanzania, Rwanda and Kenya. Information was provided by the Afrohun country manager for Cameroon that two Universities in Cameroon are planning to launch four MSc courses this year. This information would need to be verified in June 2022.

The Universities of Kinshasa and Lubumbashi in DRC claimed that their *MSc in Veterinary Epidemiology (Kinshasa)* and *Public Health (Lubumbashi)* would qualify as a One Health training opportunity, but the author was unable to confirm this on the basis of evidence provided at the respective websites. A course in Wildlife Epidemiology and Veterinary Medicine with a strong focus on One Health at the University of Lubumbashi was on offer in the academic year 2018 – 2020, but was put on halt due to lack of funds.

Egerton University, Kenya, has prepared a 9-month *Pandemic Prevention and One Health (PPOH)* Diploma course on the blueprint of the PPOH short course that was developed under the guidance of EAC with support by the GIZ project PanPrep and piloted at different Universities in 2019 and 2020, Egerton included. This Diploma course is awaiting a final stakeholder review for which currently no funds are available. Although this Diploma course appeared very interesting for the EAC region, it was not included in the database because of an unclear planning horizon.

5.2 Programs, networks and initiatives

The **German Academic Exchange Service (DAAD)** with the financial support from BMZ and the German Foreign Office has embarked on three large programs that include One Health training and research opportunities. These programs were advertised as North-South collaboration and include agreements between one or several German Universities with one or several Universities/research institutions and research institutions in the global South.

Currently the calls have all been concluded and the first round of financial commitment to the winning partnerships have been signed. However, these programs offer interesting opportunities for professionals from the One Health disciplines to look for PhD studies. It should also be of interest for universities in the Global South to look out for the next round of calls and to partner up with German Universities in preparation of submitting proposals to the next calls.

The different programs are briefly described here, more details are available on the respective websites.

¹² <https://ace.aau.org/>

Excellence Centres for Exchange and Development (Exceed):¹³

This program was launched in 2009 and is currently in the 2020 – 2024 funding phase (BMZ funding) under which 12 projects have been included. Two of them fall into the One Health domain.

One Health- TARGET: A cooperation between the Ludwig Maximilian University of Munich, University Hospital and partners with nine Universities in Africa, Asia and Latin America (see database). The process of joint planning between Universities in different continents, the gains in international collaboration and the challenges to implementation are described by Vicente et al (2021).

Centre for International Health: A cooperation between the Ludwig Maximilian University of Munich, University Hospital of Munich with partners in Africa, Asia and Latin America. Two short courses and the *MSc in International Health* are included in the database, since they are open for application by professionals outside the partner institutions.

Global Centres for Climate and Environment and for Health and Pandemic Prevention¹⁴

This large program, funded by the Foreign Office, started in May 2021 and has committed its first funding phase for the period 2021 – 2024, a second phase is planned for 2026 – 2030. It includes four **Centres for Health and Pandemic Prevention** which are based in Vietnam, Ghana, Cuba/Mexico and Gabon and which are supported by the respective partner University in Germany. The main objective of all Centres is to strengthen capacities to prevent and respond to infectious disease outbreaks with epidemic or pandemic potential through a multidisciplinary approach. As these projects have just started, only some of their capacity building offers have already started. Here a brief description of the four Centres.

Central African Infectious Disease and Epidemics Research Alliance (CAIDERA): A cooperation between the University of Tübingen, University Hospital, the Institute Pasteur and the Centre de Recherches Médicales de Lambaréné (CERMEL) in Gabon. A MSc course (see database) and a sandwich-PhD program are being planned.

German-West African Centre for Global Health and Pandemic Prevention (G-WAC): A cooperation between the Berlin School of Public health and the University of Bonn with the Kwame Nkrumah University of Science and Technology, Ghana and partners. A PhD programme in Global Health as well as a short course in Pandemic Prevention and Preparedness are being planned.

German-Latin American Centre of Infection & Epidemiology Research & Training (GLACIER): A cooperation between the Charité University Hospital Berlin, the Martin-Luther-University Halle-Wittenberg and other German partners and the Universidad de Habana, Cuba, the Universidad Nacional Autónoma de México and several Central American partners. A capacity building program will be set up to focus on prevention, alertness, treatment and response to unforeseen health

¹³ <https://www.daad.de/en/information-services-for-higher-education-institutions/further-information-on-daad-programmes/exceed/>

¹⁴ <https://www.daad.de/en/information-services-for-higher-education-institutions/further-information-on-daad-programmes/globale-zentren/>

challenges. This program will include a Summer School, a PhD program, a seminar series on interdisciplinary approaches to infectious diseases treatment and control.

PAN ASEAN Coalition for Epidemic and Outbreak Preparedness (PACE-UP): A cooperation between the Eberhard-Karls-University Tübingen and the Vietnamese-German Centre for Medical Research (VG-CARE). The Centre receives input from 28 partner institutions from 5 Asian, 4 European and 11 African countries. This program will establish a *PhD in experimental medicine* and different MSc courses that are combined with South-South and North-South internships and scholarships.

SDG Partnerships¹⁵

Under this program 16 higher education partnerships with the objectives to contribute to the SDGs are being supported through BMZ funding. A call for proposals was launched in June 2021 and the approval of projects took place in November. A first funding period covers four years. The program contains a dedicated One Health funding line and 6 of the 15 projects have been included in this funding line. These projects will have diverse opportunities for capacity building ranging from short courses, Summer schools, MSc and PhD programs to training of University lecturers in One Health core competencies and soft skills. During the time of this study the projects had just started and detailed information on the capacity building opportunities under each project were not available. The website will be updated soon with the details of each project. The list of selected One Health project is given in Table 1.

Institution	Title of project	Partner country
Potsdam Institute for Climate Impact Research	Development of the Himalayas through strengthening of training and research capacity in SDGs	Nepal and Thailand
University of Bremen	Network of Excellence in Advanced Information Technology for Tropical Medicine	Mahidol University Bangkok, Thailand
Brandenburgische Technical University Cottbus-Senftenberg	Collaborative education, research and work, integrated in future Clean Energy Technologies- H2 as an Energy Storage	Thailand
University of Würzburg	Strengthening One Health and Planetary Health in Eastern Africa	Tanzania, Kenya
University of Marburg	Introduction of a MSc course in Emergency Medicine at the partner University	Tanzania
Technical University of Dresden	Internationalizing forestry curricula study tracks through a Global-SDG-Campus network	Argentina Bangladesh Cameroon Thailand

Table 1: List of the SDG program projects labelled “One Health” by DAAD

¹⁵ <https://www.daad.de/en/information-services-for-higher-education-institutions/further-information-on-daad-programmes/sdg-partnerschaften/>

Out of the six partnerships, only the cooperation University Bremen – Mahidol University Bangkok was available for an interview. The focus of this longstanding collaboration between the two Universities is on ICT in the sector of Public Health and One Health. A 1-week Summer school combined with a 1-week research workshop, alternating annually between Bremen and Bangkok is already planned to start in 2022, and should be published soon on the website of University of Bremen.

SACIDS Foundation for One Health¹⁶

This Foundation emerged out of the Southern African Centre for Infectious Disease Surveillance (SACIDS) in 2018 and is a virtual Institute linking academic, Government and research institutions in Southern and East Africa in a South-South partnership, collaborating with external partners such as the Royal Veterinary College, UK and the London School of Hygiene and Tropical Medicine, UK and ILRI, Kenya. Nine years after the inception of SACIDS in 2008, an evaluation of the network was carried out, using the One Health Evaluation Framework¹⁷. The evaluation characterized SACIDS as “a pioneer initiative in the adoption and application of OH principles for the surveillance of infectious diseases in Southern Africa” (Hanin et al, 2018).

SACIDS is based at Sokoine University of Agriculture, Tanzania and has five founding member countries, namely Tanzania, DRC, Mozambique, South Africa and Zambia. Under the One Health Foundation it established two “African Higher Education Centres of Excellence” (ACE) with World Bank funding which offer the *MSc One Health and Molecular Biology* at Sokoine and the *MSc One Health and Analytical Epidemiology* at the University of Zambia (see data base). SACIDS runs a large number of research projects in the One Health domain all of which have capacity building components and contribute to creating One Health workforce and support the One Health platforms in its member countries.

Africa One Health University Network (AFROHUN)¹⁸

This network evolved out of the former One Health Central and Eastern Africa network OHCEA, which started in 2010, bringing the Public Health and veterinary faculties of six countries together. The primary focus was on One Health workforce strengthening. In 2019 the network leadership, acknowledging the interest of other countries and universities to join the network, expanded the mandate from regional to a continental agenda, thus the name change to Africa One Health University Network (AFROHUN).

AFrohun works currently with 19 Universities in Cameroon, Cote d’Ivoire, DRC, Ethiopia, Kenya, Tanzania, Senegal, Uganda, Liberia and Rwanda. It has country managers in each country who work closely with the affiliated Universities under the leadership of Deans / Directors. Afrohun has received

¹⁶ <http://www.sacids.org/about-us/>

¹⁷ <https://neoh.onehealthglobal.net/>

¹⁸ <https://afrohun.org/>

longstanding support from USAID and its different programs such as One Health Workforce EPT I and II¹⁹, One Health Workforce Next Generation, STOP Spillover²⁰, One Health Networks²¹.

Afrohun strives to develop a skilled and competent One Health workforce, prepared to prevent and respond to challenges of epidemics, pandemics and other complex health challenges. It facilitates networking between the different partner Universities and supports development of training programs and academic offerings that promote multi-disciplinary learning. It supplements the capacity building opportunities offered by their partners with a range of unique programs offered at its continental platform, the One Health Workforce Academies (OHWA)²². Drawing on the strength of members, partners and lessons learned over 10 years into a platform to coordinate development of a continental workforce under the umbrella of Afrohun OHWA, where structured unique training programs are incubated, piloted and delivered to users on the African continent and beyond. The platform offers a range of training programs including online short courses for specific topics across all One Health sectors and subjects and a wide range of training materials and case studies, some of which are still under preparation. This material is in the public domain and therefore expands the range of target groups to external Universities.

A core contribution by Afrohun to the integration of One Health topics into partner Universities' curricula are the 16 One Health core competency Modules²³, which have been developed in collaboration with Tufts University and University of Minnesota²⁴ and their development is described by Amuguni et al (2019). They are in the public domain and accessible on the Afrohun website. They cover soft skills and few technical topics. They can also be used as CPD units and in some countries like Tanzania, they are recognized by professional organisations e.g. the Veterinary, Medical, Nursing Councils, to gain credit points within the respective national CPD program.

Afrohun engages in the support to Students One Health Innovations Clubs (SOHIC)²⁵. Through these clubs, undergraduate students from diverse disciplines engage in community services to create awareness on prevention, preparedness and response to health threats in an interdisciplinary approach. SOHICs are student self-organizing platforms where club members build requisite competencies (knowledge,, skills and right mindset) in One Health.

Afrohun, together with its sister organization in Asia, SEAHUN , supported by a global consortium, is implementing the USAID funded project One Health Workforce – Next Generation²⁶ (OHW-NG) which started in 2019. The project supports a wide range of activities in support of One Health training content development and quality control, the One Health Academies (see there), establishment of

¹⁹ <https://www.usaid.gov/global-health/health-areas/emerging-pandemic-threats/programs>

²⁰ <https://stopspillover.org/>

²¹ https://www.usaid.gov/sites/default/files/documents/1864/OHW_Overview_Handout_2016-ct-508-1.pdf

²² <https://onehealthworkforceacademies.org/training-material/>

²³ <https://afrohun.org/course/onehealthmodules/>

²⁴ [One Health Workforce | College of Veterinary Medicine - University of Minnesota \(umn.edu\)](https://ohi.vetmed.ucdavis.edu/sites/g/files/dgvnsk5251/files/inline-files/OHW-NG%20AR%20Year%201%20-%20FINAL_2.pdf)

²⁵ <https://afrohun.org/students-one-health-innovations-club-sohic-guide/>

²⁶ https://ohi.vetmed.ucdavis.edu/sites/g/files/dgvnsk5251/files/inline-files/OHW-NG%20AR%20Year%201%20-%20FINAL_2.pdf

Communities of Practice, SOHICs (see there), Experiential learning models and development of capacity assessment tools.

Afrohun collaborates with different Government institutions, resident Universities and NGOs in One Health training of fieldworkers at community level, for example with the Red Cross in Uganda, Bread through Action in DRC, Government units responsible for risk communication and community engagements in Cameroon, Uganda, Rwanda and DRC where risk communication for COVID-19 and AMR were undertaken.

Along the same lines of One Health workforce strengthening, cooperation with the CDC and World Bank supported Field Epidemiology and Laboratory Training Program (FELTP) and the FAO supported ISAVET programs takes place in Kenya, DRC and Senegal for FELTP and in Ethiopia for ISAVET. Afrohun provides trainers for integrated One Health modules in these established training programs.

In interviews with the Afrohun country managers, One Health activities in line with the OHW-NG project were reiterated with the range of activities differing from country to country and have also been described in a paper by Atunsingwize et al (2020) for activities implemented by the One Health Institute at Makerere University, Uganda.

- Integration of One Health content in undergraduate studies of Veterinary medicine, Human Medicine, Biological Sciences. This is done through curricula review mechanism or integration of the “One Health core modules” developed by Afrohun
- One Health Field Experiential learning – student attachment programs in the field
- Students engaging with communities to sensitize them on the One Health approach
- Offering One Health modules as CPD to professional associations of Veterinarian, medical Doctors, nurses, dentists etc
- Short courses such as the One Health Institute within universities as proof of concept and demonstrating value in One Health training

An example is given here for the implementation of these streams in **Tanzania**:

1. “Train the Trainers” for lecturers teaching at diploma and certificate levels – there are more than 70 diploma and certificate level training colleges in the different One Health disciplines (nursing & midwifery, clinical medicine, pharmacy, dental health, environmental health, livestock, agriculture and wildlife) in Tanzania. Afrohun organizes an annual training of 4-5 days duration for 30 participants – 2 (1 male, 1 female) from each College, once per year. By now more than 50% of colleges have participated in the ToT program so that the participants are able to offer a One Health content within the existing curriculum of each College.
2. At Muhimbili and Sokoine Universities One Health content has been integrated into the undergraduate curricula of the faculties of Medicine, environmental health, Veterinary medicine, Nursing, Pharmacy, Paediatrics and others
3. A One Health content has been integrated into the curriculum of the *Master of Public Health* degree, offered by the School of Public Health at Muhimbili University.
4. A One Health content has been integrated into the curriculum of the *MSc of Veterinary Medicine* offered by Sokoine University
5. A 5-day CPD course on One Health has been created for different professional councils from Medical Council, Nursing Council, Environmental Council, Pharmacy Council and Veterinary Council

for which credit points (not yet harmonized for the different professions) are awarded that contribute to license renewal. A pilot CPD course will be funded this year by Afrohun, thereafter participants will have to pay a reasonable fee. The courses will be offered alternating by Sokoine and Muhimbili universities as both have been accredited for it.

African Field Epidemiology Network (AFENET)

This network was established with the support of CDC, USAID in 2005 and works now in 31 countries of Sub-Saharan Africa, running the **Field Epidemiology and Field Epidemiology and Laboratory Training Programs**, well known as FE(L)TP. The main objective is to strengthen field epidemiology and public health laboratory capacity to enable field and Ministerial staff to better respond to disease outbreaks. In the context of One Health, this well established program with trained people now available in 31 countries, is a good backbone to collaborate with One Health initiatives, e.g. Afrohun which bring the expertise of member universities into the FE(L)TP trainings.

The program also has a specific stream for Veterinarians (FELTP-V) and is also mirrored for the veterinary profession by the In-Service Applied Veterinary Epidemiology Training (ISAVET) program of FAO.²⁷

With the support of the German Foreign Office since 2014, AFENET is in a consortium with Bernard Nocht Institute, Robert Koch Institute, Swiss Tropical and Public Health Institute to implement the Global Partnership Initiated Biosecurity Academia for Controlling Health Threats (GIBACHT) project²⁸. Online and in-person training takes place in all three institutes. Currently the project ends in 2022 but a 3-year extension is being discussed.

5.3 International Organizations and other groupings

One Health Commission

The Commission provides a wealth of resources that can be used free of charge by training institutions. There is teaching material for **Primary and Secondary School education** available, such as the “Guide to developing One Lessons for K-12”²⁹; there is a “**One Health library**”³⁰ with audios, podcasts, music, book references, blogs, comments, infographics, webinars, videos and powerpoint slides – all in the public domain; and the “**Who is who in One Health**”³¹ inventory of Universities that offer trainings in

²⁷ <https://www.fao.org/documents/card/fr/c/CA7015EN/>

²⁸ <http://www.gibacht.org/>

²⁹

https://www.onehealthcommission.org/en/resources_services/one_health_education_resources/primary_secondary_k12_oh_education_resources/

³⁰ https://www.onehealthcommission.org/en/resources_services/one_health_library/

³¹

https://www.onehealthcommission.org/en/resources_services/whos_who_in_one_health/academic_organizations/

One Health or carry out research or engage in community work, Government and non-Government organisations and private and non-profit organisations that engage in One Health.

The Tripartite Organisations

Food and Agriculture Organisation of the United Nations (FAO)

FAO has reacted to the paradigm shift induced by the Covid-19 pandemic situation by putting a major effort into the development of online resources, e-learning and virtual learning. It has created the **“elearning Academy”**³² which offers a wide range of courses and webinars on topics related to achieving the SDGs and in particular SDG 4 *Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*. Hence, all courses and materials are in the public domain and available at no cost. Participating in the courses of the Academy requires a registration. For registered learners there is a possibility to acquire a “digital badge Certification” if sitting a short test at the end of each course. Courses can be taken online or can be downloaded for off-line learning at one’s own pace.

In order to bring this new form of learning closer to the field and enhance delivery and uptake, the **Virtual Learning Centres (VLCs)**³³ have been established in each region, e.g. in East Africa, Southern Africa and Northern Africa (combined with Near East) for the African continent. The approach assures that courses are tailored to regions’ needs and languages. This initiative is still being built up. It will have one stream of courses focused on **One Health capacity development**.³⁴

World Organisation for Animal Health (OIE)

The OIE has embarked on the creation of an **OIE Training Portal**³⁵ with the main objective to assist Veterinary Services to improve their competencies in line with the OIE Codes’ requirements. The eLearning modules, currently under development, target 16 competencies of Veterinary Services and for each competency a number of training options will be developed. Some will be publicly available, others are restricted to OIE Delegates, Focal Points and Contact Points within OIE training programs.

One Health is competency No 11 and will be populated with relevant courses. Currently it holds the Tripartite courses on *Joint Risk Assessment* and *Navigating the TZG* and (see database).

World Health Organisation (WHO)

WHO has launched its **OpenWHO**³⁶ on which it offers a great variety of courses sorted by themes, including those in the field of One Health. Currently three courses are offered for self-study (see database). They are usually short courses of a few hours, registration is required and, upon completion of a final test, a Certificate is issued.

³² <https://elearning.fao.org/mod/page/view.php?id=4534>

³³ <https://virtual-learning-center.fao.org/mod/page/view.php?id=1>

³⁴ <https://virtual-learning-center.fao.org/mod/page/view.php?id=371>

³⁵ <https://training.oie.int/>

³⁶ <https://openwho.org/>

6. Discussion

The focus of this study lies on capacity building opportunities that are on offer for people working in the international cooperation context and for those working in the One Health sectors in Africa, either in development cooperation or in the field.

The most obvious outcome of this collection of opportunities to gain knowledge in the field of One Health is that very few African Universities are the originators of offers advertised in the public domain.

Universities may have One Health related training opportunities under preparation, but unless one has the opportunity to speak to the department undertaking this activity directly, these efforts are not visible. For example, the University of Egerton, Kenya, which piloted the Pandemic Preparedness and One Health short course (PPOH) developed by the EAC expert group with the support from University of Heidelberg, has taken this course further and developed it into a 9-month postgraduate Diploma Course which is awaiting final approval by the Deans Committee. The Universities of Ngaoundere and Buea, Cameroon, have developed 4 MSc level courses with One Health topics, yet to receive final approval – the intention to launch them for a start this year cannot be found in the public domain or on Afrohun's website.

The large majority of offers are by European or American Universities, sometimes in partnership with African Universities. Partnerships are usually embedded into a funding program supported by major donors.

Therefore the African University networks of AFROHUN with a Pan-African mandate and with a focus on strengthening One Health workforce und SACIDS with an Eastern and Southern African mandate and a focus on research, assume a very important role. They network the Universities and link them to important technical, research, policy and funding partners such as CDC, USAID, Worldbank, to name but a few.

These networks have existed since more than a decade and have grown in strength and impact over time as well recognized University partners in the domain of One Health.

They assist African Universities in mainstreaming One Health into undergraduate programs and in the process of transition to eLearning, online learning and production of learning and teaching materials for any virtual knowledge transfer. In this context the collaboration with Tufts and Minnesota Universities, under the OHW EPT I and II, and University of California Davis and other consortium universities with Afrohun to develop a wide range of training material under the USAID funded OHW-NG project needs to be highlighted. This collection of training material that will become available to partner universities will greatly facilitate the process for African universities.

This said, across board it is noticeable that most capacity building opportunities have made the transition from face-to-face, on campus structured learning to different options of online learning, at least of parts of the programs.

Forced by Covid-19 during the pandemic, this development is here to stay and will gain in importance over time. A variety of short online courses, webinars and summer schools can already be found in the

database and their number will increase as more and more such courses will become available and old ones will be put into a depository of training materials.

As with the lack of visibility of structured courses advertised in the public domain, the manifold engagements that Afrohun facilitates at and with their 19 African partner Universities in 10 countries are also not visible. A search carried out on the websites of the 19 African Universities for the key words “One Health / Une Santé”, “Afrohun /OHCEA” revealed that only 4 Universities /Faculties mentioned “One Health /Une Santé” and only 3 made reference to “Afrohun/OHCEA”. These few references related all to events in the past, except for the call for research proposals for an Afrohun research grant dated 2022, by EISMV, Senegal. While the work of Afrohun as described in Chapter 5.2 is acknowledged, it is not reflected on the Universities’ web presentation.

In the light of the objective of this study – to bring development projects and agents closer to academia and their capacity building opportunities in the field of One Health – the quasi non-existence of the topic in the publicly accessible information provided by Afrohun member Universities is a challenge. This challenge is coupled with the fact that in this search 4 Universities / Faculties did not have a search function for their sites and the site of two Universities was not working at all.

The International Organizations like FAO, OIE and WHO, on the other hand, are all in the process of establishing eLearning virtual platforms where One Health training material will be on offer.

FAOs eLearning Academy is a source of multi-lingual, multi-topic training opportunities covering a wide range of SDG relevant themes, including One Health. One Health courses in particular are under development in the Virtual Learning Centres (VLCs), which are close to the ground and directed specifically at the needs of the regions.

Building bridges between African Universities and their networks and these large knowledge depositories could support the sustainability of Africa based capacity building efforts.

7. Recommendations

This study has collected information about capacity development opportunities in One Health in such a manner that policy makers, planners and implementers of projects in development cooperation and other stakeholders can look for suitable existing offers that respond to their needs.

The study provides ample evidence that a wide range of capacity building opportunities exists already, internationally as well as in Africa. Despite a Covid-19 related slow-down of offers by African universities, the interest to develop more such offers in the future or to revive old offers was demonstrated in all interviews with African partners. Therefore, it is recommended for project /program planners and implementers to carefully screen this and other inventories first before investing in developing project driven courses to avoid duplication.

Recommendations on how the different types of trainings described in this report could be used by projects planners and implementers are given below.

Informal trainings and general awareness creation on One Health:

The database lists 18 short courses, the majority of which are online and subscription is not difficult. The 16 “core modules” developed by Afrohun, described in Chapter 5.2, also fall into this category.

They can be combined according to needs of different target groups. These type of courses can be good introductions to the topic and a baseline of knowledge and understanding can be created. The wealth of information contained in this freely available training material will certainly increase with time and the ever growing resource of online material should be consulted to find content that matches the training needs identified by projects. In this context FAO's eLearning Academy and its support to the development of postgraduate trainings in cooperation with international and African Universities as well as the VLC's specific One Health oriented, regional training courses should be regularly screened for new developments. For Veterinarians with an interest in One Health, the upcoming OIE eLearning modules under the PVS competency "One Health" on the OIE Training Platform should also be checked regularly.

Formal trainings:

The database lists 11 MSc programs in Europe and US and 12 MSc courses offered by African Universities. This is a decent choice on formal, postgraduate training for a topic which does not belong to the mainstream study courses. The courses offered by African Universities are a unique opportunity to strengthen collaboration between projects and academia. Some of them might be suitable to be promoted at regional level, e.g. by the PanPrep or the RPPP projects, with the support from the Regional Economic Communities and / or the facilitation of AFrohun or SACIDS. A course like the *MSc Infectious diseases and Global Health*, offered jointly by the Moi University and University of Nairobi, Kenya, could well be such a course that could be branded by Afrohun, accredited by the Interuniversity Council of East Africa and be partnered by the other EAC Universities through making research opportunities available or participating in the teaching.

The flexible course offers by University of Edinburgh and Glasgow that allow students to take qualifications progressively either at Certificate, Diploma or MSc level, might be of great interest to projects that wish to engage staff or counterparts only on a part time basis and allow part time for training.

In the framework of research cooperation or particular research interests like antimicrobial resistance or zoonotic diseases, the German research institution landscape offers a lot of opportunities for PhD studies which could be facilitated through projects getting in touch with these German institutions and through scholarships by DAAD or the Georg Foster Research Fellowship of the Alexander von Humboldt Stiftung³⁷.

Formal trainings could also include short courses provided they are accredited by a national body e.g. Universities or Professional Associations and they are concluded with a knowledge test and a Certificate of participation can be issued on the basis of a proven knowledge acquisition. For example, such a course had been developed by the PanPrep project and piloted at the EAC partner countries' Universities. A similar course could be developed as a generic course and be adapted to the national epidemiological and risk situations regarding the emergence of epidemics /pandemics.

³⁷ <https://www.humboldt-foundation.de/bewerben/foerderprogramme>

Accredited short courses could also form part of **Continuous Professional Development** programs of the different professions and impact at the professional level and reach those who do not want to engage in university based learning.

Project linked training activities

If development projects work with local, regional or national Technical Training Colleges, they may be interested to involve in the “Train the Trainer” program on One Health skills as implemented by Afrohun.

Projects that wish to form “One Health units” at field level, may wish to integrate with Afrohun’s field attachment projects for technical personnel and students. This form of implementation of One Health workforce strengthening could also be used for applied research, carried out by some projects and serve many different purposes such as an increase in empirical data, contribution to defining “best practices” and contributing to the documentation of indigenous knowledge.

Projects that wish to create a general knowledge and awareness on One Health amongst their project and counterpart personnel and wish to go beyond the online courses or the 16 Afrohun “core modules”, could engage with the Afrohun country managers and the Regional Secretariat to suggest specific online training material from Afrohun’s Academy or contact the FAO VLCs of their region to seek support for tailor made training.

Capacity building as project component

For projects that have a specific focus on capacity building in One Health it could be recommended to cooperate directly or through the networks of Afrohun, SACIDS, OHRECA with the Universities that are engaging in One Health and assist them to improve this engagement.

This could be done in form of establishment of new partnerships with German Universities to enable them to apply for the next calls of One Health related DAAD programs. It could also support the expansion of One Health related training courses offered by one country to the regional context (e.g. by projects such as PanPrep or RPPP). Project – University collaboration for the exchange of field experience with academic experience in the context of “best practices” or “lessons learnt” in One Health e.g. in form of seminars, workshops, development of training material etc is another option.

8. Conclusion

This study, with its snapshot view, limited by time and scope, provides clear evidence that the One Health approach and its underlying philosophy has been well recognized by the educational sector and has been integrated as learning opportunities for different strata of society. The topic “One Health” and its principles are not mainstream educational choices, however, there is a demand for it, as demonstrated by the number of capacity building opportunities, ranging from presentations in secondary schools to different levels of qualifications at under- and postgraduate level and as CPD for different professions.

Some of the new initiatives in Africa described in this study, such as the four MSc courses at Universities in Cameroon or the planned courses at Egerton might be attributable to a certain “One Health hype”

and therefore the question of sustainability should be considered. Course organizers or those working with them (e.g EAC Secretariat, GIZ projects, Afrohun, SACIDS..) could support regional or sub-regional recognition/accreditation of national courses to avoid duplication, could foster regional mobility and creation of scholarship programs that reach beyond project / program funding and analyze the job markets for those that qualify from One Health studies. A good example are the MSc courses with One Health topics offered by UNZA which, after they had scholarships under two different funding programs, have now managed to set up a University based scholarship program.

More “joint degrees” could also be explored as another approach to sustainability in North – South cooperation which supports the “cooperating partner” to become self-sustained in offering the degree, as it is exemplified in the joint ITM – University of Pretoria degree.

It is encouraging that the capacity building efforts particularly in Africa do not stop at university or school level, but that they are actively being taken to the field level where the multidisciplinary cooperation between the decentralized units of the line Ministries is being supported and the “One Health workforce” is being strengthened. It is laudable that long-term initiatives like the FE(L)TP and FE(L)TP-V programs have been modified to include One Health elements.

These promising elements of strengthening the One Health workforce at different levels need to be monitored and their impact evaluated. This includes such snapshot studies like this one. The results of this study need to be updated and verified at regular intervals, possibly also expanded in scope (e.g. to include West / francophone Africa , Asia or Latin America), in order to remain useful and serve its objectives.

9. Additional resources and interesting websites with info on OH

These weblinks were selected from a compilation done by ILRI and by the One Health Commission documentation “who is who in One Health”³⁸. The list shows only links to different types of capacity building opportunities, including webinars, Certificate courses, MSc and PhD programs that are up to date and ongoing. It does not list links to One Health research opportunities, One Health seminars for resident students or One Health community and school teaching initiatives. Most of the listed trainings are directed at US citizens and students with an American first academic degree. Few that are targeted specifically for an international audience have been integrated into the database.

9.1 University in USA and Canada with One Health courses

[One-Health Certificate | Auburn School of Forestry & Wildlife Sciences](#)

[One Health \(berry.edu\)](#)

[DVM-MPH Program - Veterinary Medicine at Illinois](#)

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https://www.onehealthcommission.org/en/resources_services/whos_who_in_one_health/academic_organizations/

[Bachelor of Science in One Health – Fontbonne](#)

[One Health Minor – Fontbonne](#)

[One Health Master's Degree \(OHM\) | Center for One Health Research \(uaf.edu\)](#)

[One Health Training Program | Duke One Health](#)

[Graduate/Professional & Capstone Certificates in Global Health Online – Office of Global Health – UW–Madison \(wisc.edu\)](#)

[Public Health Veterinary Medicine DVM/MPH - Dual Degrees - School of Public Health - University of Minnesota \(umn.edu\)](#)

[Global One Health Initiative | College of Veterinary Medicine - University of Minnesota \(umn.edu\)](#)
(Collaborate in One Health Workforce – Next Generation)

[Global One Health Graduate Certificate | College of Public Health | The Ohio State University \(osu.edu\)](#) and <https://oia.osu.edu/units/global-one-health-initiative/training/one-health-eastern-africa-research-training-program/> Summer school and collaboration with three East Africa Universities (not clear if projects are continuing)

[Master of Science in Global Health V2 | Global Health Studies Program | Michigan State University \(msu.edu\)](#)

[One Health Center of Excellence - University of Florida, Institute of Food and Agricultural Sciences - UF/IFAS \(ufl.edu\)](#)

[One Health Center of Excellence - University of Florida, Institute of Food and Agricultural Sciences - UF/IFAS \(ufl.edu\)](#) (see MSc One Health in database)

[Winter 2022 One Health Seminar Series – One Health \(uoguelph.ca\)](#) – One Health online seminars open to the public

[Master of Public Health \(cornell.edu\)](#)

[One Health \(tuftsctsi.org\)](#) – One Health online short courses on the Tufts University elearning platform

<https://globalhealth.washington.edu/academic-programs/master-public-health>

<https://online.vetmed.illinois.edu/global-one-health> online short course

9.2 Universities and programs in Europe with One Health courses

[One Health Home \(zef.de\)](#) (intake for 2022 – 24 already concluded)

[Homepage - NCOH](#) (One Health webinars)

[One Health EJP](#) European Joint Program with offers for PhD, Summer schools, CPDs; focus on Europe

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11. Interview Partners

No	Date (2022)	Name	Institution
1	6.1.	Dr Klaas Dietze	Institute for International Animal Health / One Health of the Friedrich Löffler Institute, Insel Riems
2	10.1.	Dr Ilse Lukassowitz	EAC PanPrep Project, Tanzania
3	10.1.	Prof Georg von Samson	Tiermedizinisches Zentrum für Resistenzforschung (TZR) der FU Berlin
4	11.1	Mrs Hanna Cornelius	DAAD: Global Centres for Health and Pandemic prevention
5	11.1	Dr Olaf Horstick	University of Heidelberg
6	12.1	Mrs Mieke Stevens and Nadia Ehlinger	Institute for Tropical Medicine at the ITM, Antwerp, Belgium
7	14.1.	Mr Michael Eschweiler	DAAD: SDG Program
8	14.1.	Dr Bror Giesenbauer	Deutsche Gesellschaft für Nachhaltigkeit an Hochschulen (DG HOCH)
9	20.1.	Agnes Yawe, Christien Muhumuzu, Dr Irene Naigaga	Afrohun Secretariat
10	20.1.	Prof Fabian Leendertz	Helmholtz Institute for One Health, Greifswald
11	24.1.	Timothy Wesonga	EAC Secretariat, Tanzania
12	26.1.	Prof Anna Förster	Universität Bremen (SDG Partnership, DAAD Program)
13	26.1.	Prof Diana Meemken	FAO Reference Centre for VPH, FU Berlin
14	26.1.	Mr Sherif Azab-Els	DAAD: EXCEED program
15	2.2.	Prof Jürgen May	Bernard Nocht Institute, Hamburg
16	3.2.	Dr Claudia Wannous	OIE, Paris
17	4.2.	Prof Ongeti (by phone)	Moi University, Nairobi, Kenya
18	4.2.	Dr Olubandwa (by phone)	Egerton University, Kenya
19	4.2.	Dr Jani Puradiredjy	Bernard Nocht Institute, Hamburg
20	8.2.	Prof Martin Simuunya	Africa Centre of Excellence for Infectious diseases of humans and animals, University of Zambia
21	8.2.	Katja Raadon, Teresa Perez	DAAD and University of Munich
22	10.2.	Dr Peter Koskei	Moi University, School of Public Health, Kenya
23	11.2.	Prof Beatrice Behrens	Head, Graduate School Tierärztliche Hochschule Hannover
24	14.2.	Samuel Wanjohi	Afrohun, country manager Kenya
25	15.2.	Japhet Killewe	Afrohun, country manager Tanzania
26	16.2.	Angella Musewa	Afrohun, country manager Uganda
27	16.2.	Prof Steffen Borrmann	University of Tübingen (CAIDERA)
28	17.2.	Dr Juvenal Kagarama	Afrohun, country manager Rwanda
29	17.2.	Dr Marc Yambayamba	Afrohun, country manager DRC
30	17.2.	Mrs Manon Möller	RPPP, GIZ, Nigeria
31	18.2.	Prof Nyaga	University of Nairobi, Kenya
32	18.2.	Barbara Alessandrini	Head of Capacity building Dpt, OIE, Paris
33	23.2.	Arouna Ngapagna	Afrohun, country manager Cameroon